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Service Information Bulletin

SUBJECT	DATE
Symptom Diagnostics - Optimized Idle EPA07/10/GHG14	October 2015

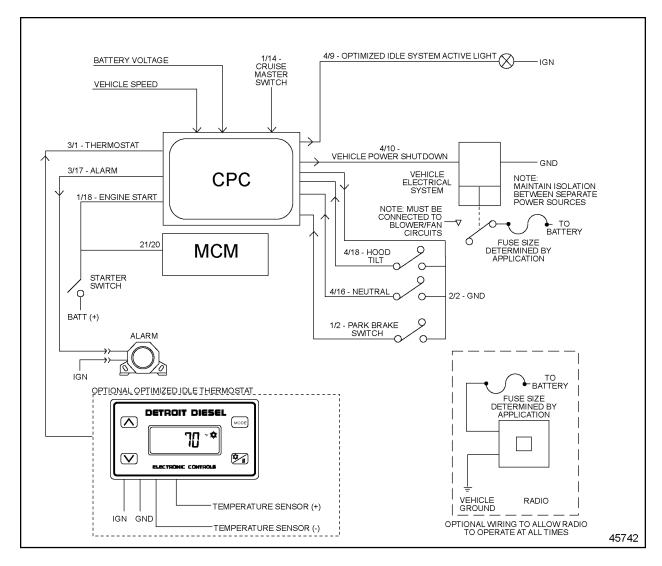
Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change	
DDC-SVC-MAN-0084 DDC-SVC-MAN-S084 DD Platform	Optimized Idle Thermostat does not power up			
		Optimized Idle does not Arm		
	Optimized Idle will arm but will not restart the engine			
		Optimized Idle does not work on Thermostat Mode		
	DD Platform	Optimized Idle does not go into Continuous Run Mode under Extreme Ambient Conditions	New Symptom Diagnostic section for Optimized Idle	
		Optimized Idle does not go into Continuous Battery Run Mode		
		Optimized Idle will intermittently not restart the engine		



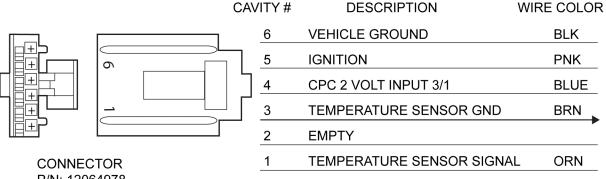
13400 Outer Drive, West, Detroit, Michigan 48239-4001 Telephone: 313-592-5000 www.demanddetroit.com

2 Optimized Idle Thermostat does not power up



Check as follows:

- 1. Disconnect the Optimized Idle Thermostat connector.
- 2. Inspect the sensor harness for bent, spread, or corroded pins.
 - a. If damage is found, repair as necessary.
 - b. If no damage is found, Go to step 3.
- 3. Turn the key to the on position, engine off.
- 4. Measure the voltage between pin 5 of the Optimized Idle Thermostat harness side connector, and ground. Is the voltage within 1.5 volts of battery voltage.
 - a. Yes, Go to step 5.
 - b. No, repair the circuit short between pin 5 of the Optimized Idle Thermostat connector and ignition feed.



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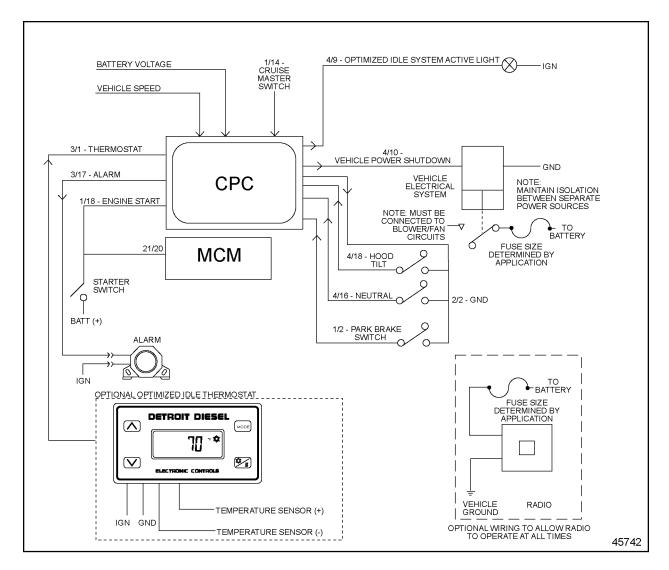
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- 5. Measure the resistance between pin 6 of Optimized Idle Thermostat harness side connector and ground. Is the resistance greater than 5 ohms?
 - a. Yes, repair the open circuit between pin 6 of Optimized Idle Thermostat connector and vehicle ground.
 - b. No, replace the Optimized Idle Thermostat.

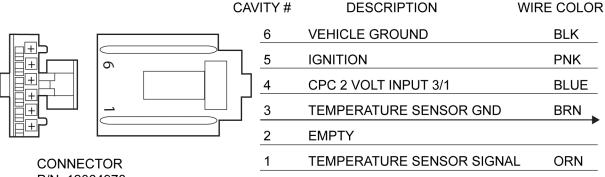
3 Optimized Idle does not Arm



Check as follows:

NOTE: On EPA07 vehicles, Optimized Idle will not function while connected to DiagnosticLink. To allow Optimized Idle to function while connected to DiagnosticLink on EPA10 and newer vehicles, go to "Actions", click on "Engine Idle Shutdown" from the drop-down and select "Allow shutdown" from the pop-up window.

- 1. Is MCM fault code SPN 1663 /FMI 7 present?
 - a. Yes; troubleshoot this code first.
 - b. No; Go to step 2.
- 2. With the ignition in the ON position, turn the thermostat on by pressing any button on the display. Does the Optimized Idle Thermostat power up?
 - a. Yes; Go to step 3.
 - b. No; disconnect the Optimized Idle Thermostat electrical connector and check pin 6 for vehicle ground and pin 5 for ignition. Repair as necessary.



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- 3. Was the CPC recently programmed?
 - a. Yes; check for proper CPC parameter settings. Refer to section "Optimized Idle" of the A&I Manual (See table below).

Table 1.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

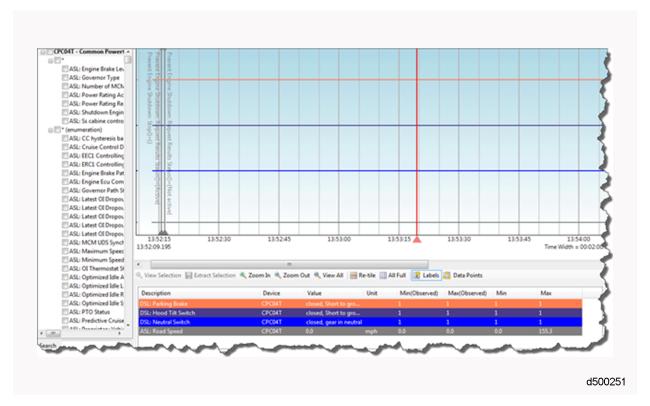
- b. No; Go to step 4.
- 4. Test the functionality of Battery Run Mode; Refer to section "Optimized Idle" of the A&I Manual (See table below). Does Optimized Idle start the engine for Battery Run mode?

Table 2.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- a. Yes; Go to step 6.
- b. No; Go to step 5.
- 5. Using DiagnosticLink, verify the operation of the Optimized Idle Safety Loop and the Vehicle Speed Sensor (VSS). Under Instrumentation, go to the Chart tab and select the following on the chart:
 - · DSL: Parking Brake
 - DSL: Hood Tilt Switch
 - · DSL: Neutral Switch
 - ASL: Road Speed

Cycle each switch and monitor their functionality. Monitor the Road Speed; it should read zero when the vehicle is stationary.

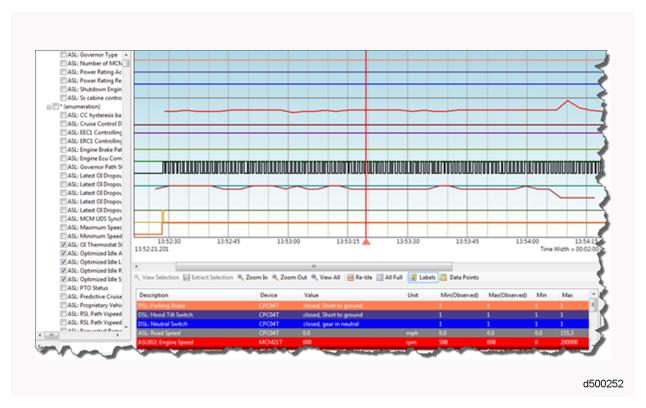


Was a fault with either the Optimized Idle Safety Loop or VSS found?

- a. Yes; repair as necessary.
- b. No; Go to step 6.
- 6. Is the vehicle equipped with an Auxiliary Power Unit (APU) or ParkSmart?
 - a. Yes; vehicles with an APU or ParkSmart may not use Optimized Idle to control the cab temperatures. If this is the customer's complaint, refer to the APU or ParkSmart operation instructions.
 - b. No; Go to step 7.
- 7. Connect to DiagnosticLink and run through an Optimized Idle cycle. Go to step 8.

NOTE: On EPA07 vehicles, Optimized Idle will not function while connected to DiagnosticLink. To allow Optimized Idle to function while connected to DiagnosticLink on EPA10 and newer vehicles go to "Actions", click on "Engine Idle Shutdown" from the drop down and select "Allow shutdown" from the pop-up window.

- 8. Under Instrumentation, go to the Chart tab and select the following on the chart:
 - · DSL: Parking Brake
 - DSL: Hood Tilt Switch
 - DSL: Neutral Switch
 - ASL: Road Speed
 - ASL002: Engine Speed
 - · DSL: Clutch Open
 - ASL: Vehicle Power Shutdown Status
 - ASL: OI Thermostat Status
 - ASL: Optimized Idle Lamp Status
 - ASL: Optimized Idle Time
 - AS094: Actual Torque Load
 - DSL: Service Brake
 - ASL: Optimized Idle Run Reason Status
 - ASL: Optimized Idle System Status



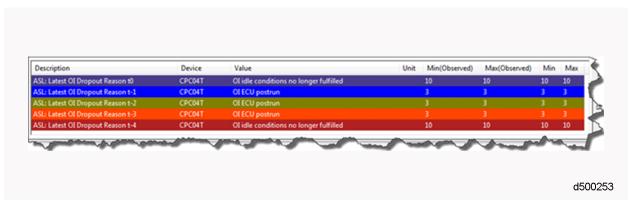
Using DiagnosticLink, determine which of the above is causing Optimized Idle to fail; Refer to section "Optimized Idle" of the A&I Manual (See table below) for operating conditions. Repair as necessary. If no failure is found, Go to step 9.

Table 3.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- 9. Under Instrumentation, go to the Chart tab and select the following on the chart:
 - ASL: Latest OI Dropout Reason t0
 - ASL: Latest OI Dropout Reason t1
 - ASL: Latest OI Dropout Reason t2
 - ASL: Latest OI Dropout Reason t3
 - ASL: Latest OI Dropout Reason t4

These chart selections will display the last five known reasons for Optimized Idle to fail. The value column will display the last known reason for an Optimized Idle failure. Repair as necessary. If no failure is found, Go to step 10.



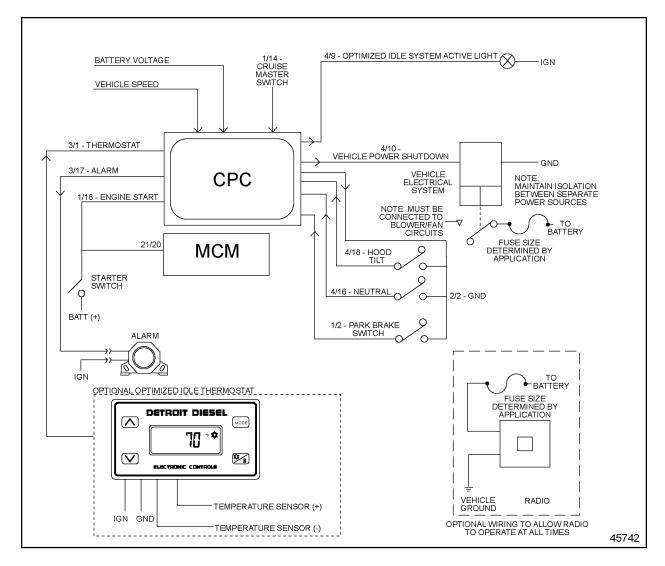
- 10. Check the Optimized Idle Thermostat settings; Refer to section "Thermostat Operation" of the Optimized Idle User Manual (DDC-SVC-MAN-0019) (http://ddcsn-ddc.freightliner.com/cps/rde/xbcr/ddcsn/DDC-SVC-MAN-0019.pdf)and Thermostat Reprogramming Guide 18SA366. Is the Optimized Idle Thermostat properly configured?
 - a. Yes; install a test CPC. Go to step 11.
 - b. No; Refer to section "Thermostat Operation" of the Optimized Idle User Manual (DDC-SVC-MAN-0019) (http://ddcsn-ddc.freightliner.com/cps/rde/xbcr/ddcsn/DDC-SVC-MAN-0019.pdf) and Thermostat Reprogramming Guide18SA366. Verify repair.
- 11. Will Optimized Idle work correctly with a test CPC?
 - a. Yes; replace the CPC.
 - b. No; Go to step 12.
- 12. Set the Optimized Idle Thermostat mode to cool the cab and put the vehicle on Optimized Idle mode. Using a heat gun, apply heat to the Optimized Idle Thermostat Skin Temperature sensor; refer to OEM literature for sensor location. Did Optimized Idle start the engine to cool the cab?
 - a. Yes; Refer to section "Optimized Idle" of the A&I Manual (See table below) for proper Optimized Idle parameter configuration.

Table 4.

	For EPA07	Refer to section "Optimized Idle"
Г	For EPA10	Refer to section "Optimized Idle"
П	For GHG14	Refer to section "Optimized Idle"

- b. No; Go to step 13.
- 13. Monitor the Optimized Idle Thermostat temperature reading while applying heat to the sensor. Is the reading on the Thermostat display accurate?
 - a. Yes; replace the Optimized Idle Thermostat.
 - b. No; Go to step 14.
- 14. Disconnect the Optimized Idle Thermostat electrical connector and measure the resistance between the Optimized Idle Thermostat connector and the Skin Temperature sensor harness side connector. Is the resistance less than 10 ohms?
 - a. Yes; replace the Skin Temperature sensor.
 - b. No; repair the circuit.

4 Optimized Idle will arm but will not restart the engine



Check as follows:

- 1. Is MCM fault code SPN 1663 /FMI 7 present?
 - a. Yes; troubleshoot this code first.
 - b. No; Go to step 2.
- 2. Was the CPC recently programmed?
 - a. Yes; check for proper CPC parameter settings. Refer to section "Optimized Idle" of the A&I Manual (See table below).

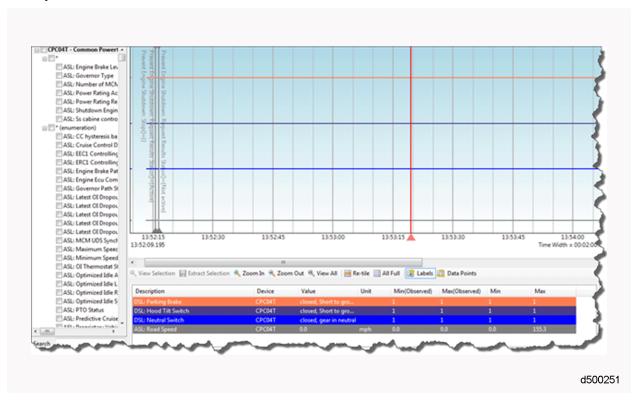
Table 5.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- b. No; Go to step 3.
- 3. Using DiagnosticLink, verify the operation of the Optimized Idle Safety Loop and the Vehicle Speed Sensor (VSS). Under Instrumentation, go to the Chart tab and select the following on the chart:
 - DSL: Parking Brake

- · DSL: Hood Tilt Switch
- · DSL: Neutral Switch
- · ASL: Road Speed

Cycle each switch and monitor their functionality. Monitor the Road Speed; it should read zero when the vehicle is stationary.



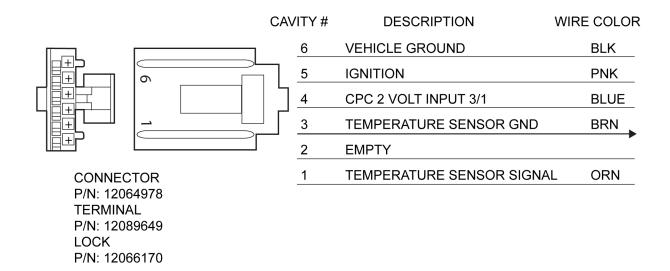
Was a fault with either the Optimized Idle Safety Loop or VSS found?

- a. Yes; repair as necessary.
- b. No; Go to step 4.
- 4. Is the vehicle equipped with an Auxiliary Power Unit (APU) or ParkSmart?
 - a. Yes; vehicles with an APU or ParkSmart may not use Optimized Idle to control the cab temperatures. If this is the customer's complaint, refer to the APU or ParkSmart operation instructions.
 - b. No; Go to step 5.
- 5. Check the Optimized Idle Thermostat settings; Refer to section "Thermostat Operation" of the Optimized Idle User Manual (DDC-SVC-MAN-0019) (http://ddcsn-ddc.freightliner.com/cps/rde/xbcr/ddcsn/DDC-SVC-MAN-0019.pdf) and Thermostat Reprogramming Guide18SA366. Is the Optimized Idle Thermostat properly configured?
 - a. Yes; install a test CPC. Go to step 6.
 - b. No; Refer to section "Thermostat Operation" of the Optimized Idle User Manual (DDC-SVC-MAN-0019) (http://ddcsn-ddc.freightliner.com/cps/rde/xbcr/ddcsn/DDC-SVC-MAN-0019.pdf) and Thermostat Reprogramming Guide18SA366. Verify repair.
- 6. Will Optimized Idle work correctly with the test CPC?
 - a. Yes; replace the CPC.
 - b. No; Go to step 7.
- 7. Set the Optimized Idle Thermostat mode to cool the cab and put the vehicle on Optimized Idle mode. Using a heat gun, apply heat to the Optimized Idle Thermostat Skin Temperature sensor; refer to OEM literature for sensor location. Did Optimized Idle start the engine to cool the cab?
 - a. Yes; Refer to section "Optimized Idle" of the A&I Manual (See table below) for proper Optimized Idle parameter configuration.

Table 6.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- b. No; Go to step 8.
- 8. Monitor the Optimized Idle Thermostat temperature reading while applying heat to the sensor. Is the reading on the Thermostat display accurate?
 - a. Yes; replace the Optimized Idle Thermostat.
 - b. No; Go to step 9.
- 9. Disconnect the Optimized Idle Thermostat electrical connector and measure the resistance between pin 3 of the Optimized Idle Thermostat connector, harness side and the sensor ground circuit of the Skin Temperature sensor harness side connector. Is the resistance less than five ohms?

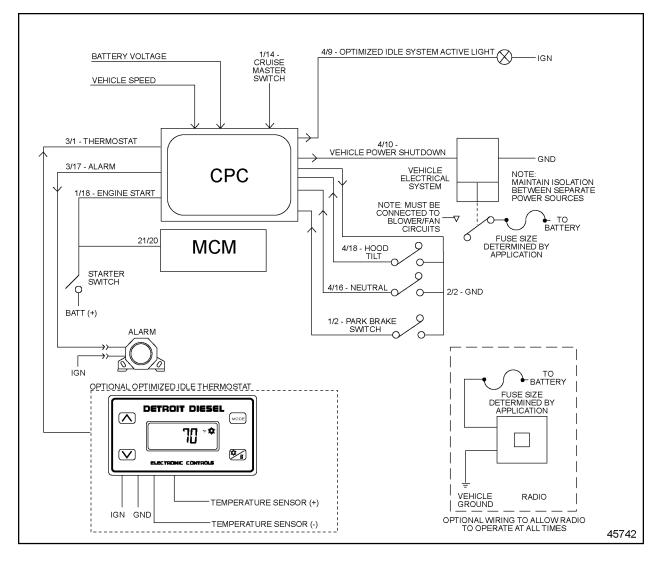


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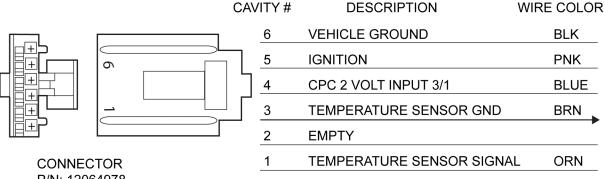
- a. Yes; Go to step 10.
- b. No; repair the circuit.
- 10. Measure the resistance between pin 1 of the Optimized Idle Thermostat connector, harness side and the sensor signal circuit of the Skin Temperature sensor harness side connector. Is the resistance less than five ohms?
 - a. Yes; replace the Optimized Idle Thermostat.
 - b. No; repair the circuit.

5 Optimized Idle does not work on Thermostat Mode



Check as follows:

- 1. With the ignition in the ON position, turn the thermostat on by pressing any button on the display. Does the Optimized Idle Thermostat power up?
 - a. Yes; Go to step 2.
 - b. No; disconnect the Optimized Idle Thermostat electrical connector and check pin 6 for vehicle ground and pin 5 for ignition. Repair as necessary.



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- 2. Was the CPC recently programmed?
 - a. Yes; check for proper CPC parameter settings, Refer to section "Optimized Idle" of the A&I Manual (See table below).

Table 7.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- b. No; Go to step 3.
- 3. Is the vehicle equipped with an Auxiliary Power Unit (APU) or ParkSmart?
 - a. Yes; vehicles with an APU or ParkSmart may not use Optimized Idle to control the cab temperatures. If this is the customer's complaint, refer to the APU or ParkSmart operation instructions.
 - b. No; Go to step 4.
- 4. Disconnect the Optimized Idle Thermostat. Check for voltage at pin 4, harness side. Is voltage greater than two volts?
 - a. Yes; repair a short to power between CPC connector 3, pin 1 and pin 4 of the Optimized Idle Thermostat connector.
 - b. No; Go to step 5.
- 5. Check the Optimized Idle Thermostat settings; Refer to section "Thermostat Operation" of the Optimized Idle User Manual (DDC-SVC-MAN-0019) (http://ddcsn-ddc.freightliner.com/cps/rde/xbcr/ddcsn/DDC-SVC-MAN-0019.pdf) and Thermostat Reprogramming Guide 18SA366. Is the Optimized Idle Thermostat properly configured?
 - a. Yes; install a test CPC. Go to step 6.
 - b. No; Refer to section "Thermostat Operation" of the Optimized Idle User Manual (DDC-SVC-MAN-0019) (http://ddcsn-ddc.freightliner.com/cps/rde/xbcr/ddcsn/DDC-SVC-MAN-0019.pdf) and Thermostat Reprogramming Guide18SA366. Verify repair.
- 6. Will Optimized Idle work correctly with the test CPC?
 - a. Yes; replace the CPC.
 - b. No; Go to step 7.

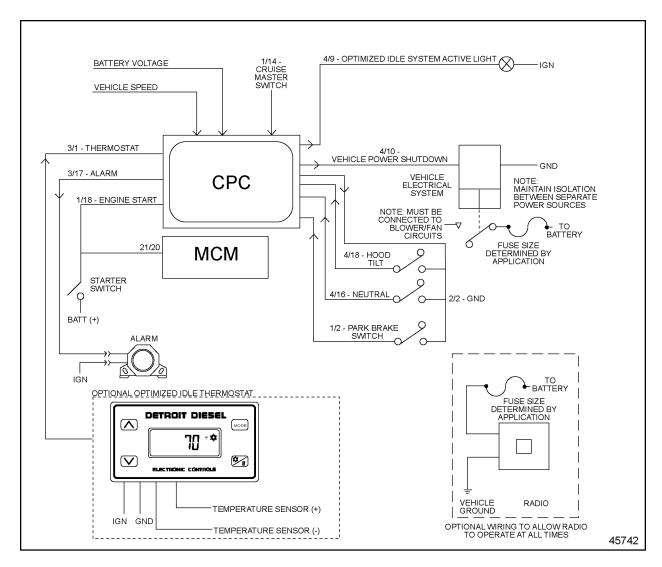
- 7. Set the Optimized Idle Thermostat mode to cool the cab and put the vehicle on Optimized Idle mode. Using a heat gun, apply heat to the Optimized Idle Thermostat Skin Temperature sensor; refer to OEM literature for sensor location. Did Optimized Idle start the engine to cool the cab?
 - a. Yes; Refer to section "Optimized Idle" of the A&I Manual (See table below) for proper Optimized Idle parameter configuration.

Table 8.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- b. No; Go to step 8.
- 8. Monitor the Optimized Idle Thermostat temperature reading while applying heat to the sensor. Is the reading on the Thermostat display accurate?
 - a. Yes; replace the Optimized Idle Thermostat.
 - b. No; Go to step 9.
- 9. Disconnect the Optimized Idle Thermostat electrical connector and measure the resistance between the Optimized Idle Thermostat connector and the Skin Temperature sensor harness side connector. Is the resistance less than 10 ohms?
 - a. Yes; replace the Skin Temperature sensor.
 - b. No; repair the circuit.

6 Optimized Idle does not go into Continuous Run Mode under Extreme Ambient Conditions



Check as follows:

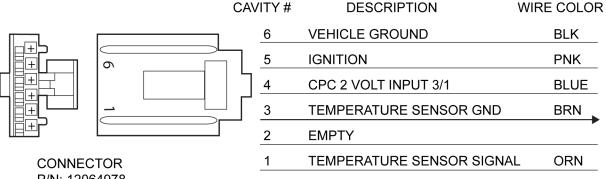
- 1. Does the HVAC work on the vehicle?
 - a. Yes; Go to step 2.
 - b. No; repair the HVAC system first. Refer to chassis OEM guidelines.
- 2. Check CPC parameters to make sure the Continuous Run feature is enabled; Refer to section "Optimized Idle" of the A&I Manual (See table below). Is Continuous Run Mode properly configured?

Table 9.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- a. Yes; Go to step 3.
- b. No; this feature is available but not set up on the vehicle.

- 3. Is the Optimized Idle Thermostat Skin Temperature sensor properly adhered onto an outside metal wall, secured and wired to the Thermostat? Refer to OEM literature for sensor location.
 - a. Yes; Go to step 4.
 - b. No; repair as necessary.
- 4. Disconnect the Optimized Idle Thermostat electrical connector and measure the resistance between the Optimized Idle Thermostat connector and the Skin Temperature sensor harness side connector. Is the resistance less than 10 ohms?



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- a. Yes; replace the Skin Temperature sensor.
- b. No; repair the circuit.

7 Optimized Idle does not go into Continuous Battery Run Mode

Check as follows:

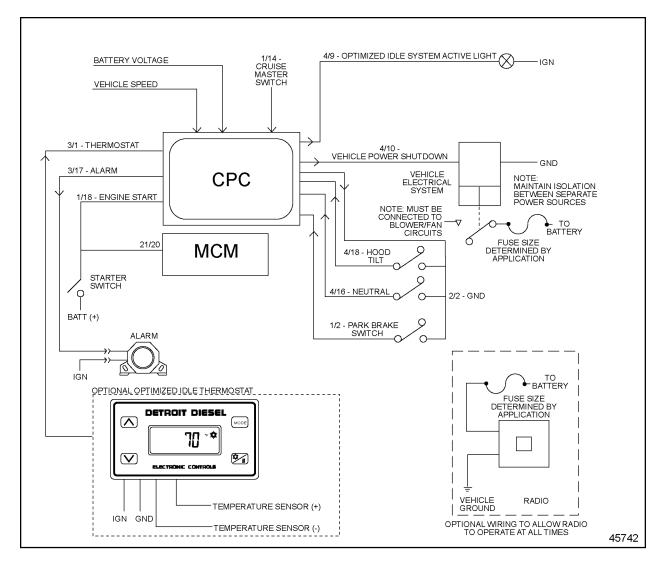
1. Check CPC parameters to make sure the Continuous Run feature is enabled; Refer to section "Optimized Idle" of the A&I Manual (See table below). Is Continuous Run Mode properly configured?

Table 10.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- a. Yes; install a test CPC.
- b. No; this feature is available but not set up on the vehicle.

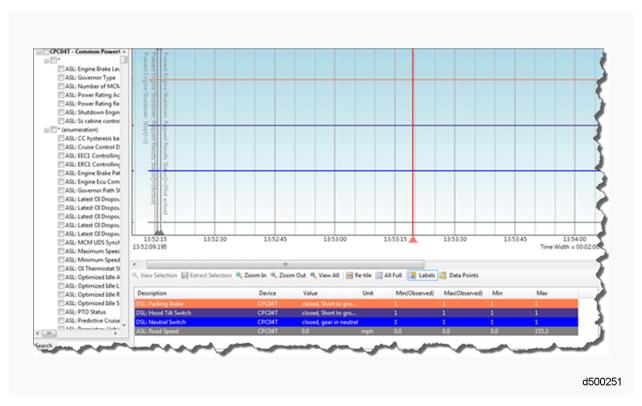
8 Optimized Idle will intermittently not restart the engine



Check as follows:

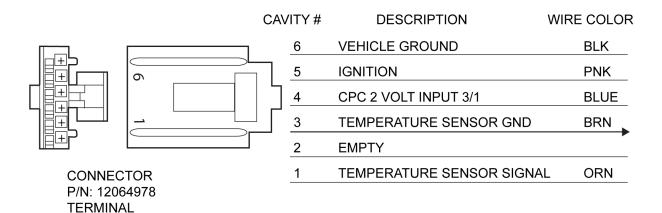
- 1. Is MCM fault code SPN 1663 /FMI 7 present?
 - a. Yes; troubleshoot this code first.
 - b. No; Go to step 2.
- 2. Using DiagnosticLink, verify the operation of the Optimized Idle Safety Loop and the Vehicle Speed Sensor (VSS). Under Instrumentation, go to the Chart tab and select the following on the chart:
 - · DSL: Parking Brake
 - · DSL: Hood Tilt Switch
 - DSL: Neutral Switch
 - · ASL: Road Speed

Cycle each switch and monitor their functionality. Monitor the Road Speed; it should read zero when the vehicle is stationary.



Was a fault with either the Optimized Idle Safety Loop or VSS found?

- a. Yes; repair as necessary.
- b. No; Go to step 3.
- 3. Is the vehicle equipped with an Auxiliary Power Unit (APU) or ParkSmart?
 - a. Yes; vehicles with an APU or ParkSmart may not use Optimized Idle to control the cab temperatures. If this is the customer's complaint, refer to the APU or ParkSmart operation instructions.
 - b. No; Go to step 4.
- 4. Is the Optimized Idle Thermostat Skin Temperature sensor properly adhered onto an outside metal wall, secured and wired to the Thermostat? Refer to OEM literature for sensor location.
 - a. Yes; Go to step 5.
 - b. No; repair as necessary.
- 5. Set the Optimized Idle Thermostat mode to cool the cab and put the vehicle on Optimized Idle mode. Using a heat gun, apply heat to the Optimized Idle Thermostat Skin Temperature sensor; refer to OEM literature for sensor location. Monitor the Optimized Idle Thermostat temperature reading while applying heat to the sensor. Is the reading on the Thermostat display accurate?
 - a. Yes; replace the Optimized Idle Thermostat.
 - b. No; Go to step 6.
- 6. Disconnect the Optimized Idle Thermostat electrical connector and measure the resistance between the Optimized Idle Thermostat connector and the Skin Temperature sensor harness side connector. Is the resistance less than 10 ohms?
 - a. Yes; replace the Skin Temperature sensor.
 - b. No; repair the circuit. Go to step 7.



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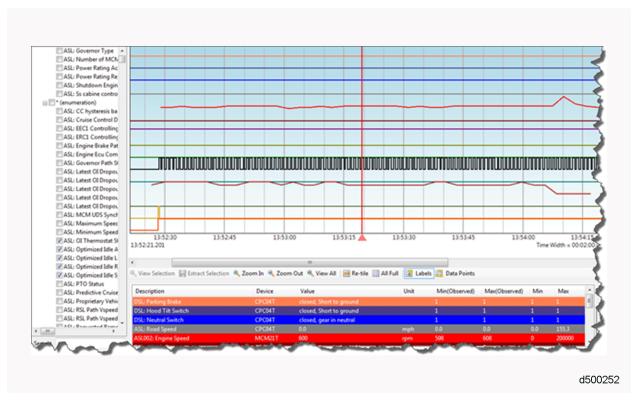
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- 7. Run the vehicle through an Optimized Idle cycle. Did Optimized Idle work correctly?
 - a. Yes; release the vehicle.
 - b. No; Go to step 8.
- 8. Connect to DiagnosticLink and run through an Optimized Idle cycle. Go to step 9.

NOTE: On EPA07 vehicles, Optimized Idle will not function while connected to DiagnosticLink. To allow Optimized Idle to function while connected to DiagnosticLink on EPA10 and newer vehicles, go to "Actions", click on "Engine Idle Shutdown" from the drop-down and select "Allow shutdown" from the pop-up window.

- 9. Under Instrumentation, go to the Chart tab and select on the following on the chart:
 - DSL: Parking Brake
 - DSL: Hood Tilt Switch
 - · DSL: Neutral Switch
 - ASL: Road Speed
 - ASL002: Engine Speed
 - DSL: Clutch Open
 - ASL: Vehicle Power Shutdown Status
 - · ASL: OI Thermostat Status
 - ASL: Optimized Idle Lamp Status
 - ASL: Optimized Idle Time
 - AS094: Actual Torque Load
 - DSL: Service Brake
 - ASL: Optimized Idle Run Reason Status
 - ASL: Optimized Idle System Status



Using DiagnosticLink, determine which of the above is causing Optimized Idle to fail; Refer to section "Optimized Idle" of the A&I Manual (See table below) for operating conditions. Repair as necessary. If no failure is found, Go to step 10.

Table 11.

For EPA07	Refer to section "Optimized Idle"
For EPA10	Refer to section "Optimized Idle"
For GHG14	Refer to section "Optimized Idle"

- 10. Under Instrumentation, go to the Chart tab and select on the following on the chart:
 - ASL: Latest OI Dropout Reason t0
 - ASL: Latest OI Dropout Reason t1
 - ASL: Latest OI Dropout Reason t2
 - ASL: Latest OI Dropout Reason t3
 - ASL: Latest OI Dropout Reason t4

These chart selections will display the last five known reasons for Opt Idle to fail. The value column will display the last known reason for an Optimized Idle failure. Repair as necessary.

